

NASA TECH BRIEF



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Technique for Pinpointing Submicron Particles in the Electron Microprobe

This technique allows an electron microprobe analysis of a particular particle seen in the electron microscope. Use of the two instruments supported by photography facilitates the analysis. This approach could be modified to apply to fractographic studies, particularly of oxidation products stripped from fractures.

The light microscope of commercial electron microprobe X-ray analyzers does not magnify enough to see a submicron particle observed in the electron microscope.

A series of electron micrographs at successively lower magnifications can localize the substrate area sufficiently for the particle to be picked up by the beam of the electron microprobe. The low magnification electron micrograph shows the particle in relation to surrounding particles, configuration of the supporting screen, and other distinctive characteristics of the assembly on which the particle is supported. When this assembly is placed in the microprobe, the reference points allow rapid pinpointing of the area in which the particle lies and of the particle itself in the beam.

Advantage is taken of the low magnification capability of the electron microscope to match the microprobe magnification best suited for scanning.

Notes:

1. The source of the particles investigated might be either terrestrial or extraterrestrial. Cosmic dust and micrometeorites may be collected and analyzed.
2. No further documentation is available. Inquiries may be directed to:

Technology Utilization Officer
Headquarters
National Aeronautics
and Space Administration
Washington, D.C. 20546
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Patent status:

No patent action is contemplated by NASA.

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